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## CURRENT SUPPORT MEMORANDUM

USSR BUILDING GAS TURBINE LOCOMOTIVE

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USSR BUILDING GAS TURBINE LOCOMOTIVE

A recent broadcast from Moscow reveals that the USSR is building its first gas turbine (GT) locomotive. 1/

GT locomotives have a large amount of power in a relatively small space\* and are able to run on low-grade, low-cost fuel oil. The Soviets believe their GT locomotive will have a coefficient of efficiency of 12-18 percent or higher 2/ compared to 5-7 percent for steam and 24-30 percent for diesel. While the coefficient of efficiency is higher for diesels, GT locomotives are able to burn much cheaper fuel than diesel locomotives.

The turbine locomotive is the only locomotive still embargoed by the West from shipment to the Sino-Soviet Bloc.

Since 1955 the Kharkov Diesel Locomotive Building Factory, the Kolomna Locomotive Building Factory and the Voroshilovgrad Locomotive Building Factory, all three subordinate to the Ministry of Transport Machine Building, have been reported working on the development of a Soviet GT locomotive. According to the Sixth Five Year Plan draft the USSR is "...to create gas turbine locomotives..." during the period 1956-1960. 3/ Kharkov reportedly was engaged in drawing plans for a GT locomotive in January 1955, 4/ but, as far as can be determined, the plant has not been linked with the development of GT locomotives since then. Voroshilovgrad, also engaged by October 1955 in the design of a GT locomotive, 5/ announced in December that it would switch to diesel and GT locomotive production during the Sixth FYP. 6/ In December 1955, Kolomna reported that it would begin production of a GT locomotive of 6,000 hp. capacity in 1956. 7/ With the Moscow Higher Technical Institute imeni Bauman, Kolomna has worked out a technical design for a two-section, 6,000 hp. GT locomotive, 8/ The plans for this locomotive were approved by the Technical Councils of the Ministry of Transport Machine Building and the Ministry of Railroads (MPS) in March or April 1956. 9/ Mass production of GT locomotives is scheduled for the end of the Sixth Five Year Plan. 10/

Although the USSR is behind the U.S. in the production of GT locomotives,\*\* it is possible that the Soviets could surpass the U.S. in GT locomotive production after the end of the present FYP.

\* For example, in a GT locomotive 4,500 hp. can be placed in a single unit with a length of 25.4 m. and will have a weight of 250 tons; a diesel locomotive with the same horsepower would be in two sections having a length of 40.4 m. and a weight of about 300 tons.

\*\* The first U.S. GT locomotive was built in 1948 and an initial order for 10 units was placed in 1951. On 1 January 1956, 20 GT locomotives were in service and 15 on order.

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Analyst:

1. FBIS, 141053, 12 Apr 56, OFF USE
2. Gudok, 2 Dec 55, p 3, U
3. FBIS, USSR & Eastern Europe, 17 Jan 56, CC-16, OFF USE
4. Soviet, Estonia, 13 Jan 55, U
5. FBIS, 97747, 12 Oct 55, OFF USE
6. FBIS, 111504, 17 Dec 55, OFF USE
7. FBIS, 111877, 12 Dec 55, OFF USE
8. FBIS, USSR & Eastern Europe, 10 Apr 56, CC-10, OFF USE
9. Gudok, 5 Apr 56, U
10. Zheleznodorozhnyi Transport, No. 12, 1955, p 5, U

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